

# Overview of Technical Skills and Competencies

## Technical Skills and Competencies (TSCs)

TSC Category	TSC Title	TSC Description	Proficiency Levels					
			1	2	3	4	5	6
Automotive Maintenance	Bus Air-Conditioning Systems Maintenance	Implement preventive and corrective maintenance of bus air-conditioning systems	●	●	●	●		
	Bus Body Work Maintenance	Execute corrective and preventive maintenance of bus body work	●	●				
	Bus Brake Systems Maintenance	Implement corrective and preventive maintenance of bus brake systems	●	●	●	●		
	Bus Drivetrain Systems Maintenance	Implement corrective and preventive maintenance of bus drivetrain systems	●	●	●	●		
	Bus Electrical and Electronic Systems Maintenance	Implement corrective and preventive maintenance of bus electrical and electronic systems	●	●	●	●		
	Bus Engine System Maintenance	Implement preventive and corrective maintenance of bus engine system	●	●	●	●		
	Bus Steering and Suspension Systems Maintenance	Implement corrective and preventive maintenance of bus steering and suspension systems	●	●	●	●		
Bus Operations	Bus Depot Operations	Manage bus depot operations through activities for bus allocation and despatch, Bus Captain duty allocation, and facilities maintenance		●	●	●		
	Bus Equipment and Systems Operation	Operate bus controls and on-board equipment		●				
	Bus Fare Management	Operate bus fare collection equipment to collect bus fares and maintain bus fare policy		●				
	Bus Garaging	Restore buses through garaging activities at the depot, which include refuelling, conducting bus inspections, parking buses, and managing coin boxes, to ensure organisational standards and bus service regulatory requirements are met		●	●	●		
	Bus Interchange Operations	Manage bus interchange operations through activities for bus service frequency regulation, bus readiness checks, safety management and crowd control, traffic control, customer service, and facilities maintenance		●	●	●		
	Bus Operations Control Management	Manage the operation of bus fleets according to designated service routes using real-time information obtained from bus fleet management systems			●	●	●	
	Bus Service Route Operations Training and Development	Provide coaching to facilitate learning of bus service route operations			●			
	Bus Vehicle Operations	Operate various bus vehicular types and models in accordance with regulatory and operational requirements		●				

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Business Management	Budgeting	Prepare organisational budgets to support short- and long-term business plans through forecasting, allocation and financial policy setting			●	●	●	●
	Business Continuity Planning	Develop and implement business continuity plans for organisational preparedness of disruptive events			●	●	●	●
	Change Management	Manage organisational change management systems to drive organisation success and outcomes by preparing, equipping and supporting adoption of change			●	●	●	●
	Data and Statistical Analytics	Identify data sets for the application of statistical techniques to analyse and interpret large complex data to uncover trends or patterns in order to locate and define new process improvement opportunities	●	●	●	●	●	●
	Innovation Management	Identify functional needs for innovation, establish systems and processes to cultivate an innovative culture that transforms ideas to realisation to enhance functional performance	●	●	●	●	●	●
	Organisational Planning and Target Setting	Identify and prioritise strategic needs of the organisation to determine key performance indicators to achieve established goals				●	●	●
	Project Management	Plan, execute, track and govern projects, including allocating and managing people resources, stakeholder engagement, time and budgets and problem resolution		●	●	●	●	●
	Report Writing	Write reports using terminology appropriate to the reader as well as identify requirements for written reports	●	●	●	●		
	Strategy Planning	Develop organisational strategies and policies by analysing the impact of internal and external influencing factors and seeking consultation from relevant stakeholders				●	●	●
Corporate Governance and Policies	Bus Regulatory Compliance	Comply with bus legislative and regulatory requirements by establishing and adhering to internal work procedures, to prevent incidents of non-compliance and regulatory oversight	●	●	●	●	●	
	Rail Regulatory Compliance	Adhere to rail legislative and regulatory requirements by establishing and developing internal work processes, to prevent incidents of non-compliance and regulatory oversight	●	●	●	●	●	●
Incident Management	Bus Recovery and Towing	Deploy on-the-road bus recovery procedures by implementing appropriate recovery actions and in coordination with the Bus Operations and Control Centre		●	●			
	Civil Emergency Management	Facilitate civil emergency operations and exercises in accordance to operation standards and regulatory requirements	●	●	●	●		
	Crisis Management	Apply strategies designed to enable an organisation to deal with disruptive events by planning for responses to potential crises, establishing monitoring systems and training systems, communicating both internally and externally, and leading recovery processes		●	●	●	●	●

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Incident Management	Rail Emergency Response Management	Respond to rail emergencies by executing and developing emergency response procedures as a countermeasure to rail operation disruptions	●	●	●	●	●	●
	Rail Incident Management	Respond to rail incidents by investigating and implementing recovery plans to maintain rail service continuity and reliability	●	●	●	●	●	●
Maintenance Management	Asset Management	Formulate and implement the organisation's asset management policies to optimise asset life-cycle and performance			●	●	●	●
	Condition-based Assets Monitoring Management	Formulate and implement condition-based maintenance procedures to enhance organisation maintenance regimes and operational reliability	●	●	●	●	●	
	Engineering Maintenance Management	Implement engineering maintenance strategy to enhance performance level of public transport fleet				●	●	●
	Equipment Maintenance and Housekeeping	Maintain and upkeep tools and equipment and implement organisational housekeeping practices	●	●	●			
	Maintenance Scheduling	Plan and manage maintenance schedules in accordance to the organisational standards and Original Equipment Manufacturer recommendations			●	●	●	
People Management	Learning and Development	Manage employees' learning and development activities to maximise employee' potential and capabilities to contribute to the organisation		●	●	●	●	●
	Manpower Planning and Deployment	Develop and implement manpower plans to support and meet the organisation's strategic and operational needs			●	●	●	
	People Development	Build a healthy pipeline of talent pool within the organisation, review talent capabilities, identify skill needs and encourage personal learning and development			●	●	●	●
	Staff Performance Management	Maximise employee performance to meet business goals by aligning organisational objectives with staff goals, creating learning and development opportunities to improve individuals, providing systems of feedback and support, and implementing an effective reward system for the employee			●	●	●	
Process Improvement	Continuous Improvement Management	Apply continuous improvement processes to optimise operating cost, task efficiency and effectiveness in production, services and processes		●	●	●	●	●
	Systems Engineering Thinking	Optimise inter-disciplinary engineering application by applying process knowledge and analytical techniques to provide engineering solutions and practices through an integrated and multidisciplinary approach				●	●	●
Rail Operations	Passenger Train Operations	Operate passenger train and respond to degraded and emergency train operations in accordance to regulatory and organisational requirements		●				

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Rail Operations	Rail Operations Control Management	Manage rail operations and control to achieve and enhance rail service continuity and reliability		●	●	●	●	●	●
	Rail Operations Enhancement Management	Formulate rail operations strategies built on rail systems fundamentals, principles and knowledge to drive enhancement of service operations and performance excellence				●	●	●	
	Track Access Management	Monitor and facilitate track access with relevant security and protection measures at appropriate zones in accordance to organisational and regulatory requirements	●	●	●	●	●	●	●
	Train Depot Control Management	Facilitate train depot activities through effective management of depot control operations		●	●				
	Train Fare and Ticket Management	Implement fare and ticket management, operations and enforcement in accordance to Fares and Tickets Regulations	●	●	●				
	Train Station Operations Management	Manage the operations of train stations to achieve rail service continuity, safety and reliability		●	●	●	●	●	●
Rail Systems Maintenance	Automatic Fare Collection Auxiliary Systems Maintenance	Implement preventive and corrective maintenance activities of Automatic Fare Collection (AFC) auxiliary systems	●	●	●	●			
	Automatic Fare Collection Gate Maintenance	Implement preventive and corrective maintenance activities of Automatic Fare Collection gates	●	●	●	●			
	Automatic Fare Collection Sales Device Maintenance	Implement preventive and corrective maintenance activities of Automatic Fare Collection (AFC) sales devices	●	●	●	●			
	Civil Structure Maintenance	Implement preventive and corrective maintenance of civil structures	●	●	●	●			
	Communication Auxiliary Systems Maintenance	Implement preventive and corrective maintenance activities of communication auxiliary systems	●	●	●	●			
	Communication Backbone System Maintenance	Implement preventive and corrective maintenance activities of communication backbone system	●	●	●	●			
	Communication Power System Maintenance	Implement preventive and corrective maintenance activities of communication power system	●	●	●	●			
	Drainage, Plumbing and Sanitary Systems Maintenance	Implement preventive and corrective maintenance of drainage, plumbing and sanitary systems	●	●	●	●			

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Rail Systems Maintenance	Emergency and Security Communication Systems Maintenance	Implement preventive and corrective maintenance activities of emergency and security communication systems	●	●	●	●		
	Engineering Train and Rolling Stock Operation	Operate engineering train, rolling stock and on-board equipment to support maintenance operations		●	●			
	Escalator and Travelator Maintenance	Implement preventive and corrective maintenance of escalator and travelator	●	●	●	●		
	Fire Protection Systems Maintenance	Implement preventive and corrective maintenance of lift systems	●	●	●	●		
	Heavy Crane Vehicle Maintenance	Implement preventive and corrective maintenance activities of heavy crane vehicle	●	●	●	●		
	Heavy Lifting Machinery Operation	Operate heavy lifting machinery and the appropriate deployment of machinery for maintenance activities	●	●				
	High Voltage Power Systems Maintenance	Implement preventive and corrective maintenance activities of high voltage power systems	●	●	●	●		
	Lift Systems Maintenance	Implement preventive and corrective maintenance of lift systems	●	●	●	●		
	Locomotive Maintenance	Implement preventive and corrective maintenance activities of locomotive	●	●	●	●		
	Low Voltage Power Systems Maintenance	Implement preventive and corrective maintenance activities of low voltage power systems	●	●	●	●		
	Multi-Function Vehicle Maintenance	Implement preventive and corrective maintenance activities of multi-function vehicle	●	●	●	●		
	Network Systems Maintenance	Implement preventive and corrective maintenance activities of network systems	●	●	●	●		
	Platform Screen Door Maintenance	Implement preventive and corrective maintenance of Platform Screen Door	●	●	●	●		
	Radio System Maintenance	Implement preventive and corrective maintenance activities of radio system	●	●	●	●		
	Rail Grinding Vehicle Maintenance	Implement preventive and corrective maintenance activities of rail grinding vehicle	●	●	●	●		
	Rail Track Inspection	Plan, coordinate and perform inspection of rail tracks through on-site patrols	●	●	●	●		

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Rail Systems Maintenance	Rail Track Maintenance	Implement preventive and corrective maintenance activities of rail track	●	●	●	●		
	Rolling Stock Air-Condition and Ventilation Systems Maintenance	Implement preventive and corrective maintenance activities of rolling stock air-conditioning and ventilation systems	●	●	●	●		
	Rolling Stock Auxiliary Systems Maintenance	Implement preventive and corrective maintenance activities of rolling stock auxiliary systems	●	●	●	●		
	Rolling Stock Bogie Maintenance	Implement preventive and corrective maintenance activities of rolling stock bogie	●	●	●	●		
	Rolling Stock Brake Systems Maintenance	Implement preventive and corrective maintenance activities of rolling stock brake systems	●	●	●	●		
	Rolling Stock Car Body Maintenance	Implement preventive and corrective maintenance activities of rolling stock car body	●	●	●	●		
	Rolling Stock On-Board Control and Communication Systems Maintenance	Implement preventive and corrective maintenance activities of rolling stock on-board control systems	●	●	●	●		
	Rolling Stock Power Systems Maintenance	Implement preventive and corrective maintenance activities of rolling stock power systems	●	●	●	●		
	Rolling Stock Propulsion Systems Maintenance	Implement preventive and corrective maintenance activities of rolling stock propulsion systems	●	●	●	●		
	Signal Interlocking Systems Maintenance	Implement preventive and corrective maintenance activities of signal interlocking systems	●	●	●	●		
	Signalling Auxiliary Device and Equipment Maintenance	Implement preventive and corrective maintenance activities of signalling auxiliary devices and equipment	●	●	●	●		
	Station Air-Conditioning Systems Maintenance	Implement preventive and corrective maintenance of station air-conditioning systems	●	●	●	●		
	Supervisory Control and Data Acquisition System Maintenance	Implement preventive and corrective maintenance activities of Supervisory Control and Data Acquisition system	●	●	●	●		

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Rail Systems Maintenance	Third Rail Maintenance	Implement preventive and corrective maintenance activities of third rail system	●	●	●	●		
	Track Tamping Vehicle Maintenance	Implement preventive and corrective maintenance activities of track tamping vehicle	●	●	●	●		
	Trackside Automatic Train Control Equipment Maintenance	Implement preventive and corrective maintenance activities of Trackside Automatic Train Control equipment	●	●	●	●		
	Train Supervisory System Maintenance	Implement preventive and corrective maintenance activities of train supervisory system	●	●	●	●		
	Trainborne Automatic Train Control Equipment Maintenance	Implement preventive and corrective maintenance activities of trainborne Automatic Train Control equipment	●	●	●	●		
	Travel Information System Maintenance	Implement preventive and corrective maintenance activities of travel information system	●	●	●	●		
	Ventilation System Maintenance	Implement preventive and corrective maintenance of ventilation system	●	●	●	●		
	Video Surveillance System Maintenance	Implement preventive and corrective maintenance activities of video surveillance system	●	●	●	●		
	Wagon Maintenance	Implement preventive and corrective maintenance activities of wagons	●	●	●	●		
	Stakeholder and Customer Management	Crowd Management	Manage and control commuter traffic in public transport premises through crowd management and control techniques to facilitate service continuity and reliability		●	●	●	●
Security Management		Develop and enforce security measures in public transport premises in accordance with organisational standards and regulatory requirements	●	●	●	●	●	●
Service Excellence		Develop a service framework to manage and address service challenges as well as collaborate with relevant partners to deliver service excellence	●	●	●	●	●	
Stakeholder Management		Manage organisation's key stakeholders, strategic partners and investors to ensure continuous levels of engagement by identifying needs, setting service standards and resolving issues in accordance with organisational procedures			●	●	●	
Supply Chain Management	Inventory Management	Formulate and implement inventory management strategies targeted at ensuring availability of equipment, tools and materials for maintenance work			●	●	●	
	Vendor Management	Manage vendor by ensuring adherence to contract terms and organisational safety and operating requirements	●	●	●	●	●	

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Technology Management	Internet of Things Application	Implement Internet of Things (IoT) technologies to drive efficiency and effectiveness of operations		●	●	●	●	
	Robotics and Automation Application	Apply and integrate evaluated technologies into organisation operations or processes to achieve desired outcomes and reduce reliance on manual tasks		●	●	●	●	
	Technology Application	Integrate technologies into operations of the organisation to optimise efficiency and effectiveness of processes		●	●	●		
Workplace Safety and Health	Health and Fatigue Risk Management	Identify and manage risks associated with fatigue within the work environment to ensure all personnel are fit to perform assigned duties	●	●	●	●		
	Work at Heights	Maintain Workplace Safety and Health (WSH) standards and practices when working at heights by establishing safety protocols and complying with regulatory and other Work at Height (WAH) and WSH requirements	●		●			
	Workplace Facilities Safety Management	Implement safety procedures and risk control measures in a public transport workplace environment and public access areas to ensure safety of staff and commuters		●	●	●	●	
	Workplace First-Aid	Assess casualties and apply first aid, Cardiopulmonary Resuscitation (CPR) and Automated External Defibrillator (AED) skills and abilities in the workplace	●	●	●			
	Workplace Safety and Health Culture Development	Create and maintain a Workplace Safety and Health culture based on a common set of attitudes, behaviours, and competencies		●	●	●	●	●
	Workplace Safety and Health for Confined Spaces	Perform duties with proper supervision and safety precautions, when working in confined spaces	●		●			
	Workplace Safety and Health for Electrical Safety	Manage safety to minimise risks and hazards when performing electrical-related maintenance activities	●	●	●			
	Workplace Safety and Health for Fire Prevention and Fire Fighting	Formulate and execute fire safety protocols and processes to minimise risk posed to customers during emergency situations involving fire	●	●	●	●		
	Workplace Safety and Health for Incident and Accident Investigation	Investigate Workplace Safety and Health incidents and accidents based on root cause analysis and identification of corrective actions to prevent recurrences		●	●	●	●	
	Workplace Traffic Safety Management	Manage movement of bus fleet and pedestrians at the workplace to minimise traffic risks and hazards	●	●	●	●		



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## General Descriptor for Technical Skills and Competencies (TSCs)

Level	Responsibility (Degree of supervision and accountability)	Autonomy (Degree of decision-making)	Complexity (Degree of difficulty of situations and tasks)	Knowledge and Abilities (Required to support work as described under Responsibility, Autonomy and Complexity)
6	Accountable for significant areas of work, strategy or overall satisfaction	Empowered to chart direction and practices within and outside of work (including professional field/ community), to achieve/exceed work results	Complex	<ul style="list-style-type: none"> <li>• Synthesise knowledge issues in a field of work and the interface between different fields, and create new forms of knowledge</li> <li>• Employ advanced skills, to solve critical problems and formulate new structures, and/or to redefine existing knowledge or professional practice</li> <li>• Demonstrate exemplary ability to innovate, and formulate new ideas and structures</li> </ul>
5	Accountable for achieving assigned objectives, decisions made by self and others	Provide leadership to achieve desired work results; Manage resources, set milestones and drive work	Complex	<ul style="list-style-type: none"> <li>• Evaluate factual and advanced conceptual knowledge within a field of work, involving critical understanding of theories and principles</li> <li>• Select and apply an advanced range of cognitive and technical skills, demonstrating mastery and innovation, to devise solutions to solve complex and unpredictable problems in a specialised field of work</li> <li>• Manage and drive complex work activities</li> </ul>
4	Work under broad direction  Hold accountability for performances of self and others	Exercise judgement; adapt and influence to achieve work performance	Less routine	<ul style="list-style-type: none"> <li>• Evaluate and develop factual and conceptual knowledge within a field of work</li> <li>• Select and apply a range of cognitive and technical skills to solve non-routine/ abstract problems</li> <li>• Manage work activities which may be unpredictable</li> <li>• Facilitate the implementation of innovation</li> </ul>
3	Work under broad direction  May hold some accountability for performance of others, in addition to self	Use discretion in identifying and responding to issues, work with others and contribute to work performance	Less routine	<ul style="list-style-type: none"> <li>• Apply relevant procedural and conceptual knowledge and skills to perform differentiated work activities and manage changes</li> <li>• Able to collaborate with others to identify value-adding opportunities</li> </ul>
2	Work with some supervision  Accountable for a broader set of tasks assigned	Use limited discretion in resolving issues or enquiries. Work without frequently looking to other for guidance	Routine	<ul style="list-style-type: none"> <li>• Understand and apply factual and procedural knowledge in a field of work</li> <li>• Apply basic cognitive and technical skills to carry out defined tasks and to solve routine problems using simple procedures and tools</li> <li>• Present ideas and improve work</li> </ul>
1	Work under direct supervision assigned  Accountable for tasks	Minimal discretion required. Expected to seek guidance	Routine	<ul style="list-style-type: none"> <li>• Recall factual and procedural knowledge</li> <li>• Apply basic skills to carry out defined tasks</li> <li>• Identify opportunities for minor adjustments to work tasks</li> </ul>